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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/486,264	05/12/2000	GREGOR SCHWEGLER	2046/48639	3695

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EXAMINER

KILKENNY, TODD J

ART UNIT

PAPER NUMBER

1733

20

DATE MAILED: 07/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

A9-20

Office Action Summary

Application No.

09/486,264

Applicant(s)

SCHWEGLER, GREGOR

Examiner

Todd J. Kilkenney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-15 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>19</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Objections

2. Claim 14 is objected to because of the following informalities: a transitional phrase is missing in line 2, such as "wherein", to separate the preamble from the body of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4, 7, 9, 11, and 13 - 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Admitted Prior Art (Specification, page 2, lines 28 – page 3, line 36) in view Ragout (US 4,467,836), Champleboux et al (US 4,895,185), Hertzberg (US 4,966,802) and Maumus et al (US 5,980,669; newly cited).

Applicant admits that it is known to use carbon panels for reinforcing supporting structures, wherein the carbon panels are anchored at their ends (specification, page 2, lines 28 – 35) and in some known instances attached in a pretensioned state to the face

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of the supporting structure (Specification, page 3, lines 24 – 36). It further appears through applicant's background of the invention, that problems associated with forming an adequate end anchoring for the known carbon panels are also documented in the prior art. Applicant's claimed invention provides for splitting the carbon panel into at least two strips extending parallel to or at an acute angle with respect to each other at an end as a solution to this admittedly known problem.

However, splitting the ends of reinforcing devices is known as evidenced by both Ragout (reinforcing element 14 in Figures 1 – 4) and Champleboux et al (reinforcing element 4, Figures 1 and 5), wherein reinforcement plies made of flexible metal cables are split at their ends so as to be "attached extremely firmly to rigid end pieces in order to allow the entire assembly to resist very significant forces" (Ragout; Column 1, lines 50 – 55) by producing a self-locking fit that increases the connection in response to any tensile load exerted on the reinforcing plies (Ragout; Column 3, lines 15 – 21); and as disclosed by Champleboux et al to increase the linking quality between the reinforcing devices and the end pieces to which they are linked (Champleboux et al; Column 1, lines 31 – 44).

Furthermore, splitting the ends of prepregs formed of carbon fiber plies or fiber reinforced resin composite plates is known in the art as evidenced for example by Hertzberg (Figure 4 for splitting of prepreg plies and Col. 3, lines 4 – 15 for composite plate) and Maumus et al (Figures 7 and 8; Col. 1, lines 38 – 50; Col. 2, lines 38 – 45 for fiber plies and Col. 2, lines 46 – 51 for splitting of a single plate).

It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to solve the known problems of adequately anchoring the carbon panels of the admitted prior art by splitting the ends of the admitted prior art carbon panel reinforcing devices in view of the teachings to Ragout and Champleboux et al, so as to produce an attachment of the carbon panels to end elements that is extremely firm in response to tensile load exerted on the reinforcing panels with an increased linking quality, wherein as evidenced by Hertzberg and Maumus et al, splitting the ends of fiber reinforced plies or fiber reinforced composite plates is known in the art.

In regard to claim 2, the admitted prior art suggests said carbon panels are known to have been glued at their ends to short steel plates and as disclosed by Ragout, both ends of the reinforcing devices are split and terminated in end elements (Ragout, Figures 1 and 2) to accommodate the split ends in a self locking connection so as to achieve the desired firmer fit.

As to claim 4, in view of the secondary references to Ragout, Champleboux et al, Hertzberg and Maumus et al, splitting at the ends into superimposed strips of approximately equal thickness would have been readily apparent to one of ordinary skill in the art (see Figures).

As to claim 7, the shape of the anchor element is considered a simple design consideration and it would be obvious to one of ordinary skill in the art to have said anchor element be parallelepiped and of plastic or metal as anchor elements conventionally known in the support structure reinforcing art are steel plates which are parallelepiped in shape (recognized as a rectangular plate) and metal.

As to claim 9, in view of the admitted prior art suggesting that carbon panels are known to be pretensioned before gluing, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a threaded bore on the end opposite of the outlet of the carbon panel so as to provide the end element with means to pretension the panel immediately prior to gluing.

As to the claims 11 and 13, the admitted prior art teaches that it is known to use carbon panels for reinforcing supporting structures, wherein the carbon panels are anchored at their ends (specification, page 2, lines 28 – 35) and in some known instances glued in a pretensioned state to the face of the supporting structure (specification, page 3, lines 24 – 36). As disclosed by Ragout and Champeboux et al, it is known to split the ends of reinforcing devices, wherein the split ends are positioned in corresponding slots of end elements to achieve a self locking, firmer attachment of the reinforcing devices to the structures for which they are intended to reinforce. Furthermore, again as evidenced by Hertzberg and Maumus et al, splitting the ends of fiber preforms is known in the art. It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to split the ends of the admittedly known carbon panel reinforcing devices and to terminate the split ends in accommodating end elements so as to achieve a firmer attachment of the carbon panels, having a stronger linking quality and attachment to the supporting structure in response to tensile load exerted thereon, wherein as further evidenced by Hertzberg and Maumus et al, splitting the ends of fiber reinforced plies or fiber reinforced composite plates is known in the art.

It would have also been obvious to one of ordinary skill in the art at the time of the invention to cut the panel to split the ends, as cutting is recognized as a conventionally known method for splitting and only the only results would be achieved.

As to claim 13 and the limitation of separating the reinforcement into three splits, Champleboux et al. discloses such an assembly (see Figures 1 and 5). As to the pretensioned limitation, it is again noted that applicant appears to admit that gluing pretensioned carbon panels to supporting structures is known (see applicant's specification, page 3, lines 24 – 36).

As to claim 14, Hertzberg appears to suggest that it is known in splitting prepreg layups to split such prepregs in the fiber direction (See Figures 3 and 4).

5. Claim 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (Specification, page 2, lines 28 – page 3, line 36) in view Ragout (US 4,467,836), Champleboux et al (US 4,895,185) and Maumus et al (US 5,980,669; newly cited) as applied to claim 1 above, and further in view of Meier et al. (US 5,937,606).

As disclosed by Meier et al, it is known when employing carbon-fiber lamina as reinforcement for supporting structures to additionally anchor said reinforcing lamina by means of a wedge (end anchoring element), which can be mechanically fastened by bolts transversely extended from the carbon reinforcing lamina (Column 4, line 3 – Column 4, line 9; Column 20, lines 20 - 26). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to reinforce the connection between the anchor element and the supporting structure with mechanical fastenings,

such as bolts, as such is known as disclosed by Meier et al. for carbon panel reinforcing devices to have its connection additionally augmented.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4 and 11 – 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. As to claim 4, in lines 3 and 4, the claim recites, "at least on end of the carbon panel being split into at least two strips" and in lines 7 and 8, the claim recites, "each end of the panel is split into superimposed strips". This is confusing. How can only end be split, as suggested by lines 3 and 4, when each end is split into superimposed strips as defined later in the claim?

9. Claim 11 recites the limitation "the arrangement" in 10. There is insufficient antecedent basis for this limitation in the claim. It is unclear if the arrangement defines the split panel or the split panel and the end element to which it is brought into connection.

10. Claim 12 recites the limitation "the arrangement" in 11. There is insufficient antecedent basis for this limitation in the claim. It is unclear if the arrangement defines the split panel or the split panel and the end element to which it is brought into connection.

11. Claim 13 recites the limitation "the arrangement" in 12. There is insufficient antecedent basis for this limitation in the claim. It is unclear if the arrangement defines the split panel or the split panel and the end element to which it is brought into connection.

Allowable Subject Matter

12. Claims 3, 5, 6, 10 and 12 are allowed.

The secondary references to Ragout and Champleboux et al suggest wedge means as connecting means for the split ends of the reinforcing plies. Therefore, none of the prior art of record teaches or otherwise renders obvious an end element which includes retaining slots that are located wedgewise relative to which the split strips are inserted as required by independent claim 3. Claims 5, 6, and 10, being dependent on claim 3 are allowable for the same reasons. As to claim 12, the admitted prior art of record fails to teach or otherwise render obvious introducing the strips of the split end of the carbon panel "into separate retaining slots of the end element which are arranged fanwise with respect to one another and glued in place or soaked with an adhesive".

Response to Arguments

13. Applicant's arguments with respect to claims 1 – 15 have been considered but are moot in view of the new ground(s) of rejection.

It is recognized that Ragout and Champleboux et al describe reinforcement comprising metal cable plies, made out of fibers oriented in a helical manner. However, it is the examiner's position that the splitting of metal cable plies for the purpose of achieving a more adequate and tighter fit between the reinforcement and its anchoring

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means is directly pertinent to applicant's invention and the known problem of achieving a more adequate anchoring of carbon panels. Furthermore, the newly applied references of Hertzberg and Maumus et al are now provided as evidence that "carbon panels" are known to be split at their ends, wherein applicant's claim language of "carbon panel" is recognized to read on both a layup of carbon fiber reinforced prepreg plies, wherein the splitting is accomplished between plies or a single composite plate comprising reinforcing carbon fibers in a resin matrix. It is noted that both Hertzberg and Maumus et al appear to suggest splitting prepreg layups or single composite plates as identified in the rejection above.


Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd J. Kilkenny** whose telephone number is **(703) 305-6386**. The examiner can normally be reached on Mon - Fri (9 - 5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

TJK
July 2, 2003


Michael W. Ball
Supervisory Patent Examiner
Technology Center 1700